REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Office Action dated May 15, 2003 (U.S. Patent Office Paper No. 11). In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

As outlined above, claims 2 to 6 and 11 are being amended to correct formal errors and to more particularly point out and distinctly claim the subject invention. Claims 7 to 10 and 12 to 15 stand withdrawn from consideration in this application.

Formal Objections or Rejections

Claim 6 was objected to due to the following informalities: the term "display" should be "displaying" and the term "an" should be inserted before "individual's". Applicants respectfully submit that they have amended the claim to reflect the above mentioned changes.

Claim 5 was objected to because the term "pattern" should be "patterns". Applicants respectfully submit that they have amended the claim to reflect the above mentioned change.

Claims 2 to 4 and 11 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regards as the invention.

In response to Examiner's various objections to the claims, Applicants respectfully submit that claims 2 to 4 and 11 have been amended and all informalities mentioned in the Office Action on pages 3 to 5 have been cured. Applicants respectfully submit that no new matter is introduced by the submission of these amendments.

Prior Art Rejections

Claims 1 to 6 and 11 were rejected under 35 U.S.C. §102(b) as being anticipated by Wen *et al.*, PNAS (1/1998) vol. 95, pp. 334-339, (further , the Wen reference).

Claim 1 recites a method for displaying gene expression patterns of multiple genes whose expressions change according to experiment cases, where a first axis represents the genes and a second axis represents the experiment cases. The method comprises the steps of designating a segment along the second axis in the expression pattern data of the multiple

genes, clustering the expression pattern data within the designated segment along the second axis based on a predetermined reference value, repeating clustering within the same cluster in a forward or reverse direction along the second axis while changing the reference value, and displaying the results according to a predetermined display format.

In the Office Action on page 6, the Examiner alleged that Figs. 3a and 3c anticipate the recitation of claims 1 and 4. Applicants respectfully disagree.

On page 337 the Wen reference discloses, in lines 3-4: "Within each wave, genes are grouped according to gene families, not according to proximity as determined by Euclidean distance". Applicants respectfully submit that claim 1 recites clustering the expression pattern data of the genes ... based on a predetermined reference value.

Further, the Wen reference discloses on page 337, lines 5 to 8: "Plots of all normalized time series, highlighting wave 3 (*Left*, white lines) and a subcluster of wave 3 (*Right*, white lines plotted on top of remaining genes of wave 3 in red). Subclusters (secondary branching) were selected by visual inspection from tree in b; e.g., the plotted time series of the wave 3 subcluster correspond to the branchlet highlighted in white within wave 3 in b." Applicants respectfully submit that claim 1 recites repeating clustering within the same cluster in a forward or reverse direction along the second axis while changing the reference value.

Applicants respectfully submit that the Wen reference does not disclose clustering the expression pattern data within the designated segment along the second axis based on a predetermined reference value and repeating clustering within the same cluster in a forward or reverse direction along the second axis while changing the reference value. The Wen reference discloses genes grouped in cluster according to gene families not, as recited in claim 1, "expression pattern data of the genes" clustered according to a "predetermined reference value". Therefore, based on the above, Applicants respectfully contend that the Wen reference does not disclose, teach or suggest all features of claim 1. Therefore, Applicants contend that claim 1 is allowable over the Wen reference.

Claims 2-6 depend from and add features to allowable claim 1. Therefore, claims 2 to 6 are allowable over the Wen reference for at least the same reasons as discussed above in connection with claim 1.

Currently amended claim 11 recites an apparatus for analyzing gene expression patterns, which acquires, from a database, expression pattern data of multiple genes whose expressions change according to experiment cases, and which visually displays the

expression patterns on a screen of a display device, where a first axis represents the genes and a second axis represents the experiment cases. The apparatus comprises an inputting means for designating a segment along the second axis in the expression pattern data of the multiple genes obtained from the database, and an arithmetic unit for clustering the expression pattern data within the designated segment along the second axis based on a predetermined reference value, wherein said arithmetic unit repeats clustering within the same cluster in a forward or reverse direction along the second axis while changing the reference value, and displays the results according to a predetermined display format.

The Examiner alleged in the Office Action, on page 6 that "Wen's method is a computer implemented one and he teaches that he uses a software package for implementing his method, thus Wen's computer system for running his method necessarily comprises an input means and an arithmetic unit."

The Wen reference discloses on page 334, left column, lines 30 to 34: "Herein, we present a practical experimental-computational strategy that may allow us to advance our understanding of the nature of the complex self-organizing process underlying mammalian central nervous system (CNS) development." Further, on page 335, left column, the reference mentions the use of various software such as the OLIGO software, FITCH software or S-PLUS statistical software package. Applicants respectfully submit that although inputting means are necessary to supply data into the machine that runs the software mentioned by the Wen reference, the reference does not expressly disclose, teach, or suggest inputting means and much less "inputting means for designating a segment along the second axis in the expression pattern data of the multiple genes obtained from the database". Based on the above Applicants respectfully contend that the Wen reference does not identically disclose each and every feature of claim 11. Therefore, claim 11 is not anticipated by the Wen reference.

Based on the arguments presented above, Applicants respectfully submit that claims 1 to 6 and 11 are patentable over the disclosure of the Wen reference and respectfully ask the Examiner to withdraw the rejections.

Conclusion

In view of all the above, Applicants respectfully submit that certain clear and distinct differences as discussed exist between the present invention as now claimed and the prior art references upon which the rejections in the Office Action rely. These differences are more

than sufficient that the present invention as now claimed would not have been anticipated nor rendered obvious given the prior art. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application as amended is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicant's undersigned representative at the address and phone number indicated below.

Respectfully submitted,

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